AMENDMENT

Prior to examining on the merits and calculating the filing fee for the continuation application filed herewith, please enter the following amendments:

IN THE TITLE:

Please amend the title as shown in Attachment "A".

IN THE SPECIFICATION:

Please amend the specification as shown in Attachment B.

IN THE CLAIMS:

Please cancel claims 3-11, amend claim 1, and add newly submitted claims 12-41, as shown in Attachment C.

REMARKS

The above amendments have been made to the specification to make reference to the earlier filed application and to conform the specification to amendments previously made to the specification in the parent application, as shown in Attachment B. The amendments to the claims have been made to further prosecute the subject matter of this continuation application.

In the Final office Action in parent application 09/856,849 claims 1, 2, 12-19 and 21 were rejected under 35 U.S.C. § 103(a)

as obvious over each of the Menke et al '661 patent, Ryder, and the Fleming et al. '975 patent in view of Henderson, Ito et al., and Serizawa et al.; claims 1, 2, 13-15, 19, and 21 were rejected under 35 U.S.C. 102(e) as anticipated by Serizawa et al.; claims 1, 2, 12-19 and 21 were rejected under 35 U.S.C. § 103(a) as obvious over Serizawa et al.; and claims 1, 2, 12-19 and 21 were rejected under the judicially created doctrine of obviousness type double patenting over U.S. Patent No. 6,368,432.

By this Preliminary Amendment and Remarks, independent claim 1 is amended to specify average particle size and specific surface of activated carbon and is presented for further examination, claim 2 is resubmitted without further amendment, claims 3-11 are cancelled, claims 12-20 which were added in the parent application are re-submitted, claim 21 which was added to the parent application is not re-submitted here, and new claims 21-41 are added. After the foregoing amendments, claims 1, 2, and 12-41 are pending. Additionally, a terminal disclaimer over the Serizawa '432 patent is submitted, and arguments are provided traversing the rejections set forth in the Final Office Action in the parent application.

New claim 23 is a "consisting of" style of claim 1. New claim 26 covers Examples 1-4 and 7-9. New claim 29 covers

Examples 10 and 11. New claim 33 covers Examples 12-14. New claim 37 covers Example 15.

Support for new claims 21, 22, 24, 27, 30, 34 and 38 is found in the specification from page 8 line 22 to page 9 line 6. Support for new claims 25, 28, 31, 35, and 39 is found in the specification at page 10 lines 7-10. Support for new claims 32 and 40 is found in the specification at page 12 lines 6-7. Support for new claims 36 and 41 is found in the specification at page 12 lines 25-26.

Rejections Under 35 U.S.C. § 102(e)

The Examiner rejected claims 1, 2, 13-15, 19, and 21 as anticipated by Serizawa et al.

RESPONSE

As to Paragraphs 3 and 4, the claimed invention has been rejected as being anticipated by Serizawa et al., which was patented on April 9, 2002 and is owned by the assignee of the claimed invention, NOF corporation. Although the inventors of the claimed invention are included among the inventors of the cited Serizawa patent, the inventors of the prior inventors are not identical to the inventors of the Serizawa patent. Claim 1 as amended and resubmitted claims A gas generating composition for use with an airbag device or a seat belt pretensioner apparatus, comprising, inter alia, microcrystalline carbon powder as a reducing agent,

wherein the microcrystalline carbon powder is activated carbon having an average particle size of 0.1 to 500 μm and having a specific surface of 5 to 1600 m^2/g. In contrast, Applicants submit that the cited Serizawa patent does not disclose a preferable average particle size of activated carbon as claimed.

Rejections over Serizawa under 35 U.S.C. § 103(a)

As to Paragraph 5, the claimed invention has been rejected as being obvious over Serizawa et al. The parent application is a PCT national phase application having an international filing date of October 14, 1999, which is before November 29, 1999. However, this is a continuation application having a U.S. filing date after November 29, 1999 and therefore Applicants submit the Serizawa patent is removed from the grounds of rejection due to Applicants having filed this continuation application (MPEP 706.02(l)(1)).

Applicants submit the Serizawa reference should be removed from the ground of rejection due to applicant having filed this continuation application. Since this continuation application has a filing date after November 29, 1999, the provisions of the AIPA apply and therefore under 35 U.S.C. § 103(c) the commonly assigned prior patent to Serizawa et al. which qualifies as prior art under 35 U.S.C. § 102(e) "shall not preclude patentability"

The cited Serizawa patent is assigned of record to NOF corporation, the assignment being recorded in the USPTO on December 15, 1998 at reel 009653, frame 0635; and this continuation application is similarly assigned of record to NOF corporation, the assignment having been filed in the USPTO in the parent application on May 25, 2001 and recorded at reel 011951, frame 0886.

Remaining Rejections under 35 U.S.C. § 103(a)

In the parent application the Examiner rejected claims 1, 2, 12-19 and 21 as obvious over each of the Menke et al '661 patent, Ryder, and the Fleming et al. '975 patent in view of Henderson, Ito et al., and Serizawa et al.

RESPONSE

In Paragraph 2 of the Office Action, the claimed invention has been rejected over each of Menke (USP 5,589,661), Ryder (USP 6,143,103) and Fleming (USP 6,364,975) in view of Henderson (USP 3,720,553), Ito (USP 6,033,550) and Serizawa. The applicants submit that all of the claim limitations are not satisfied even if each of Menke, Ryder and Fleming are combined with Henderson and Ito (and Serizawa). The reasons are follows:

(1) Claimed Invention

To obtain optimized burn rate and to generate gas containing substantially no carbon monoxide, the claimed composition requires activated carbon having a predetermined. average particle size and a predetermined specific surface. Said activated carbon is a good reducing agent that can efficiently react with an oxidizer in the gas generating composition. None of the references teach the use of said activated carbon as a good reducing agent.

The amended claim 1 further requires preferred weight percentages of three essential ingredients. None of the references teach the weight percentages of three essential ingredients as claimed.

(2) Menke, Ryder and Fleming references

These references disclose use of carbon black or graphite but do not disclose use of activated carbon as a reducing agent.

Further, each of Menke and Fleming references relates a propellant, not a gas generating composition for use with an airbag device or a seat belt pretensioner apparatus. And, each of these references does not suggest that a propellant can use as a gas generating composition for use with an airbag device or a seat belt pretensioner apparatus. Thus, there is no motivation to combine Menke or Fleming with other references relating a gas generating composition for use with an airbag device or a seat belt pretensioner apparatus.

(3) Henderson reference

Henderson does not disclose average particle size nor specific surface of activated carbon. Henderson only discloses at col. 3 lines 32-36 carbon black having relatively small average particle size of 50 to 5000 angstrom. Therefore, even if Henderson and other references are combined, all of the claim limitations are not satisfied.

Henderson is a propellant invention, not an invention relating a gas generating composition for use with an airbag or a seat belt pretensioner apparatus. Thus, it is unnecessary for Henderson to consider the amount of carbon monoxide in the gas generated by the propellant and to maintain stability over time at 107°C for 400 hours. A person skilled in the art knows that gas generating speed of a propellant is quite greater than that of a gas generating composition for use with an airbag device or a seat belt pretensioner apparatus. Therefore, there is no motivation to combine Henderson with other references relating a gas generating composition for use with an airbag device or a seat belt pretensioner apparatus.

(4) Ito reference

Ito does not disclose average particle size nor specific surface of activated carbon. As described on col. 10 lines 25-52, activated carbon of Ito serves as a combustion catalyst, not as a

reducing agent. The function and purpose of activated carbon of Ito is quite different from that of the claimed invention. Therefore, even if Ito and other references are combined, all of the claim limitations are not satisfied.

(5) Serizawa reference

The Serizawa reference should be removed from the ground of rejection due to applicant having filed this continuation application. Since this continuation application has a filing date after November 29, 1999, the provisions of the AIPA apply and therefore under 35 U.S.C. § 103(c) the commonly assigned prior patent to Serizawa et al. which qualifies as prior art under 35 U.S.C. § 102(e) "shall not preclude patentability"

As described, Applicants furthermore submit that the Serizawa reference does not disclose a preferable average particle size of activated carbon. Since none of the references disclose a preferable range of average particle size of activated carbon and it is difficult to specify a preferable range of average particle size of activated carbon, the claimed invention is asserted to be non-obvious over the references.

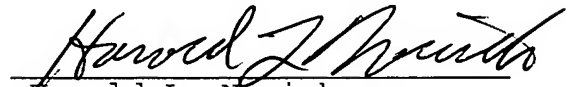
Non-Statutory Double Patenting Rejections

Claims 1, 2, 12-19, and 21 were rejected under the judicially created doctrine of obviousness-type double patenting over U.S. 6,368,432.

RESPONSE

Submitted herewith is a Terminal Disclaimer which obviates the non-statutory double patenting rejections.

Respectfully submitted,
NATH & ASSOCIATES PLLC

By: 
Harold L. Novick
Registration No. 26,011
Customer No. 20529

Date: March 17, 2004
NATH & ASSOCIATES PLLC
1030th Street, NW - 6th Floor
Washington, D.C. 20005

Attachment "A"
(Amended Title)

Please amend the title of this continuation application as follows:

GAS GENERATING COMPOSITION AND METHOD

Attachment "B"
(Specification Amendments)

Please delete the section heading on page 1, line 1, as follows:

~~SPECIFICATION~~

Please amend the title on page 1, line 3, as follows:

GAS GENERATING COMPOSITION AND METHOD

Please insert on page 1, line 4, the following:

This is a continuation of applications Serial Number 09/856,849 filed May 25, 2001, which is a § 371 of International Application PCT/JP99/05666 filed October 14, 1999, the contents of which are incorporated herein by reference in their entirety.

Please amend the section heading on page 1, line 5, as follows:

~~Technical Field~~ BACKGROUND OF THE INVENTION

Please amend the section heading on page 1, line 14, as follows:

~~Background Art~~

Please amend the section heading on page 2, line 11, as follows:

~~Disclosure of the Invention~~ BRIEF SUMMARY OF THE INVENTION

Please amend the section heading on page 3, line 11, as follows:

~~Brief Description of Drawings~~ BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

Please amend the section heading on page 3, line 25, as follows:

~~Best Mode for Carrying Out the Invention~~ DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Please amend the section heading on page 34, line 7, as follows:

~~Industrial Applicability~~

Attachment "C"
(Amended Claims)

1. (Currently amended) A gas generating composition for use with an airbag device or a seat belt pretensioner apparatus, comprising:

ammonium nitrate as an oxidizing agent[[,]];

microcrystalline carbon powder as a reducing agent, wherein the microcrystalline carbon powder is activated carbon having an average particle size of 0.1 to 500 μm and having a specific surface of 5 to 1600 m^2/g; and

a stabilizer, wherein the amounts of the ammonium nitrate, the microcrystalline carbon, and the stabilizer are from 89 to 99wt%, from 1 to 6wt%, and from 0.2 to 6wt%, respectively, with respect to the total amount of the ammonium nitrate, the microcrystalline carbon and the stabilizer.

2. (Original) The gas generating composition as recited in claim 1, wherein the amount of the microcrystalline carbon is from 1.5 to 6wt% with respect to the amount of the ammonium nitrate, and the amount of the stabilizer is from 10 to 200wt% with respect to the amount of the microcrystalline carbon.

3-11. (Canceled)

12. (New) The gas generating composition as recited in claim 1, wherein the ammonium nitrate has an average particle size of 1 to 1000μm, and the stabilizer has an average particle size of 0.1 to 500μm.

13. (New) The gas generating composition as recited in claim 1, wherein the ammonium nitrate is phase-stabilized ammonium nitrate.

14. (New) The gas generating composition as recited in claim 1, wherein the gas generating composition further comprises a high energy substance.

15. (New) The gas generating composition as recited in claim 1, wherein the gas generating composition further comprises a binder and a plasticizer.

16. (New) The gas generating composition as recited in claim 1, wherein the gas generating composition is formed into a cylindrical body that has an outer diameter of 5 to 40mm and a length of 5 to 40mm and has 7 or 19 substantially equally spaced bores with an inner diameter of 1 to 10mm extending longitudinally therethrough, and the thickness from a surface of the cylindrical body to the bore is 3mm or less.

17. (New) The gas generating composition as recited in claim 1, wherein the gas generating composition is molded into a cylindrical body that has an outer diameter of 3 to 10mm and a length of 2 to 10mm and has a bore with an inner diameter of 1 to 8mm extending longitudinally at the center thereof, and the thickness from a surface of the cylindrical body to the bore is 3mm or less.

18. (New) The gas generating composition as recited in claim 1, wherein the gas generating composition is molded into a cylindrical body that has an outer diameter of 0.5 to 5mm and a length of 0.5 to 5mm and has a bore with an inner diameter of 0.1 to 4mm extending longitudinally at the center thereof, and the thickness from a surface of the cylindrical body to the bore is 1mm or less.

19. (New) The gas generating composition as recited in claim 1, wherein the stabilizer is at least one selected from the group consisting of diphenylamine, resorcinol, and diethyldiphenyl urea.

20. (New) A method for manufacturing a molded product of a gas generating agent, the method comprising the steps of:

adding an organic solvent to a gas generating composition to make it into a block, the generating composition including ammonium nitrate as an oxidizing agent, microcrystalline carbon powder as a reducing agent and a stabilizer, wherein the amounts of the ammonium nitrate, the microcrystalline carbon, and the stabilizer are from 89 to 99wt%, from 1 to 6wt%, and from 0.2 to 6wt%, respectively, with respect to the total amount of the ammonium nitrate, the microcrystalline carbon and the stabilizer; and

extruding the block into a desired shape by an extruder.

21. (New) The gas generating composition as recited in claim 1, wherein the activated carbon has an average particle size of 1 to 100μm and has a specific surface of 10 to 1500m^2/g.

22. (New) The gas generating composition as recited in claim 1, wherein the activated carbon has an average particle size of 3 to 50μm and has a specific surface of 50 to 1300m^2/g.

23. (New) A gas generating composition for use with an airbag device or a seat belt pretensioner apparatus, essentially consisting of:

ammonium nitrate as an oxidizing agent;

activated carbon having an average particle size of 0.1 to 500μm and having a specific surface of 5 to 1600m^2/g as a reducing agent; and

a stabilizer, wherein the amounts of the ammonium nitrate, the activated carbon, and the stabilizer are from 89 to 99wt%, from 1 to 6wt%, and from 0.2 to 6wt%, respectively, with respect to the total amount of the ammonium nitrate, the activated carbon and the stabilizer.

24. (New) The gas generating composition as recited in claim 23, wherein the activated carbon has an average particle size of 3 to 50μm and has a specific surface of 50 to 1300m^2/g.

25. (New) The gas generating composition as recited in claim 23, wherein the stabilizer is at least one selected from the group consisting of diphenylamine, resorcinol, and diethyldiphenyl urea.

26. (New) A gas generating composition for use with an airbag device or a seat belt pretensioner apparatus essentially consisting of:

ammonium nitrate as an oxidizing agent;

activated carbon having an average particle size of 0.1 to 500μm and having a specific surface of 5 to 1600m^2/g as a reducing agent; and

a stabilizer, wherein the amounts of the ammonium nitrate, the activated carbon, and the stabilizer are from 89 to 99wt%, from 1 to 6wt%, and from 0.2 to 6wt%, respectively, with respect to the total amount of the ammonium nitrate, the activated carbon and the stabilizer, thereby the gas generating composition produces substantially no carbon monoxide when burned.

27. (New) The gas generating composition as recited in claim 26, wherein the activated carbon has an average particle size of 3 to 50μm and has a specific surface of 50 to 1300m^2/g.

28. (New) The gas generating composition as recited in claim 26, wherein the stabilizer is at least one selected from the group consisting of diphenylamine, resorcinol, and diethyldiphenyl urea.

29. (New) A gas generating composition for use with an airbag device or a seat belt pretensioner apparatus essentially consisting of:

ammonium nitrate as an oxidizing agent;

activated carbon having an average particle size of 0.1 to 500μm and having a specific surface of 5 to 1600m^2/g as a reducing agent;

a high-energy compound selected from the group consisting of trimethylene trinitroamine, tetramethylene tetranitroamine, pentaerythritol tetranitrate, triaminoguanidinenitrate), and hydrazine nitrate; and

a stabilizer, wherein the amounts of the ammonium nitrate, the activated carbon, and the stabilizer are from 89 to 99wt%, from 1 to 6wt%, and from 0.2 to 6wt%, respectively, with respect to the total amount of the ammonium nitrate, the activated carbon and the stabilizer, thereby the gas generating composition produces substantially no carbon monoxide when burned.

30. (New) The gas generating composition as recited in claim 29, wherein the activated carbon has an average particle size of 3 to 50μm and has a specific surface of 50 to 1300m^2/g.

31. (New) The gas generating composition as recited in claim 29, wherein the stabilizer is at least one selected from the group consisting of diphenylamine, resorcinol, and diethyldiphenyl urea.

32. (New) The gas generating composition as recited in claim 29, wherein the amount of the high-energy compound in the gas generating composition is 15wt% or less.

33. (New) A gas generating composition for use with an airbag device or a seat belt pretensioner apparatus essentially consisting of:

ammonium nitrate as an oxidizing agent;

activated carbon having an average particle size of 0.1 to 500μm and having a specific surface of 5 to 1600m^2/g as a reducing agent;

a binder selected from the group consisting of cellulose acetate, cellulose butylate, polyesters, polyethers, polyurethanes, nitrocellulose, poly(vinyl alcohol), glycidyl azide polymers, thermoplastic elastomers, and thermoset elastomers; and

a stabilizer, wherein the amounts of the ammonium nitrate, the activated carbon, and the stabilizer are from 89 to 99wt%, from 1 to 6wt%, and from 0.2 to 6wt%, respectively, with respect to the total amount of the ammonium nitrate, the activated carbon and the stabilizer, thereby the gas generating composition produces substantially no carbon monoxide when burned.

34. (New) The gas generating composition as recited in claim 33, wherein the activated carbon has an average particle size of 3 to 50μm and has a specific surface of 50 to 1300m^2/g.

35. (New) The gas generating composition as recited in claim 33, wherein the stabilizer is at least one selected from the group consisting of diphenylamine, resorcinol, and diethyldiphenyl urea.

36. (New) The gas generating composition as recited in claim 33, wherein the amount of the binder in the gas generating composition is 25wt% or less

37. (New) A gas generating composition for use with an airbag device or a seat belt pretensioner apparatus essentially consisting of:

ammonium nitrate as an oxidizing agent;

activated carbon having an average particle size of 0.1 to 500μm and having a specific surface of 5 to 1600m^2/g as a reducing agent;

a high-energy-compound selected from the group consisting of trimethylene trinitroamine, tetramethylene tetranitroamine, pentaerythritol tetranitrate, triaminoguanidinenitrate), and hydrazine nitrate;

a binder selected from the group consisting of cellulose acetate, cellulose butylate, polyesters, polyethers, polyurethanes, nitrocellulose, poly (vinyl alcohol), glycidyl azide polymers, thermoplastic elastomers, and thermoset elastomers; and

a stabilizer, wherein the amounts of the ammonium nitrate, the activated carbon, and the stabilizer are from 89 to 99wt%, from 1 to 6wt%, and from 0.2 to 6wt%, respectively, with respect to the total amount of the ammonium nitrate, the activated carbon and the stabilizer, thereby the gas generating composition produces substantially no carbon monoxide when burned.

38. (New) The gas generating composition as recited in claim 37, wherein the activated carbon has an average particle size of 3 to 50μm and has a specific surface of 50 to 1300m^2/g.

39. (New) The gas generating composition as recited in claim 37, wherein the stabilizer is at least one selected from the group consisting of diphenylamine, resorcinol, and diethyldiphenyl urea.

40. (New) The gas generating composition as recited in claim 37, wherein the amount of the high-energy compound in the gas generating composition is 15wt% or less

41. (New) The gas generating composition as recited in claim 37, wherein the amount of the binder in the gas generating composition is 25wt% or less.